

REMARKS

Reconsideration of the present application is respectfully requested.

The indication that claims 4, 6, 13-15 and 25-27 would be allowed if rewritten is acknowledged with appreciation.

The objection to claim 21 is believed overcome by amendment to that claim.

The rejection of claims 16-22 under 35 USC 112 is believed overcome by amending claim 16 as shown above.

The rejection of claims 1, 2 and 16 under 35 USC 102(b) as being anticipated by Kim et al. is respectfully traversed.

For a prior art reference to anticipate in terms of 35 U.S.C. 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990).

Claim 1 features the step of modulating the current, in reference to an occurrence of interference in an interface between a head and a surface. Modulating the current, in reference to an occurrence of interference in an interface between a head and a surface is generally exemplified in the specification of the present invention at page 7, lines 11-14 as:

Advantageously, the systems, methods, and apparatus described manage or control the input current to the spindle motor of the mass storage device in a manner that reduces the wear on the head and recording medium, yet provides efficient use of the limited power available to the mass storage device.

That claim 1 feature is further exemplified in the specification of the present invention at page 11, lines 21-23 as:

In block 620, modulating is performed in a manner that reduces the wear on the head and recording medium, yet provides efficient use of the limited power available to the mass storage device.

Further illustration of this feature is disclosed in the specification of the present invention at page 21, lines 4-7, as:

However, when the current is modulated, such as the cessation of the head flying on an air bearing, either during an intermittent bounce off of the disc, or a longer term sliding of the head on the rotating disc, the available torque 1910 modulates during that time.

Therefore, the current is modulated when there is an interference or an anomaly with the air bearing. Further clarifying the previous Amendment, that interference or anomaly is either actual or expected.

Claim 16 features determining interference between a head and a storage medium of the storage device.

The Office action cites to Kim et al. at Fig. 2B (#64), col. 3, lines 5-37 and col. 7, lines 31-44. Those disclosures of Kim et al. do not disclose either the claim 1 feature or the claim 16 feature.

#64 in Fig. 2B is a corrected PES signal. PES is a position error signal that relates to following a track on a surface of a disc drive. The disclosure of col. 3, lines 5-37, can best be summarized by the disclosure at col. 3, lines 21-23, which states the "present invention may also be regarded as a method of compensating for repeatable runout (RRO) in a track recorded on a disk." And the disclosure at col. 7, lines 31-44, explains how the RRO correction information is retrieved from a track. RRO correction is not identical to the claim 1 feature of modulating the current, in reference to an occurrence of interference in an interface between a head and a surface. Nor is it identical to the claim 16 feature of determining interference between a head and a storage medium of the storage device. In fact, those cited disclosures nowhere mention any interference in an interface between a head and a surface. Since Kim et al. do not identically show those features of claims 1 and 16, they are not anticipated and are allowable. Claim 2 is also allowable due to its dependency on allowable claim 1.

The rejection of claims 12 and 28 under 35 USC 102(e) as being anticipated by Houston et al. is respectfully traversed. Claim 12 features receiving performance data of the mass storage device, the data including the quantity of current applied to the spindle motor at a plurality of discrete points in time. Claim 28 features a receiver of performance data of the mass storage device, wherein the data includes a quantity of current applied to the spindle motor at each of a plurality of discrete points in time.

The Office Action cites to Houston et al. at col. 3, lines 19-27, as identically showing those two claim features. That citation discloses that a servo controller is operative to determine values for servo parameters during each of a plurality of sampling intervals. However, that citation does not disclose that those sampling intervals are in any way related to the servo controller being operative to update the spindle command signal. Absent such a disclosure, the

claim 12 feature of receiving performance data of the mass storage device, the data including the quantity of current applied to the spindle motor at a plurality of discrete points in time and the claim 28 feature of a receiver of performance data of the mass storage device, wherein the data includes a quantity of current applied to the spindle motor at each of a plurality of discrete points in time are not identically shown. This is not to say that additional disclosure is not necessary to identically show these claim features. As a result, claims 12 and 28 are not anticipated and are allowable.

The rejection of claims 1-3, 11, 16, 23, 24, 29 and 30 under 35 USC 103(a) as being unpatentable over Dunn et al. is respectfully traversed.

Claim 1 features an occurrence of interference in an interface between a head and a surface.

The Office Action correctly notes that Dunn et al. do not explicitly disclose "the drag occurring between the head and the surface." The Office Action then tries to overcome this deficiency by contending "it would be obvious to a person of ordinary skill in the art at the time of the invention would know that the air circulating around the disk creates the interference (drag) between the head and the disk surface, thereby creating an interference between the head and the disk surface." As explained below, this contention is unsupported and therefore cannot be used to support this claim rejection.

First, prior knowledge in the field of the invention must be supported by tangible teachings of reference materials. Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc., 02-1532, *6 (Fed. Cir. 8/31/04) (Fed. Cir. BBS). Nowhere does the present Office Action provide any tangible teachings or reference materials that support the Office Action's contention "it would be obvious to a person of ordinary skill in the art at the time the invention would know that the air circulating around the disk creates the interference (drag) between the head and the disk surface, thereby creating an interference between the head and the disk surface." That knowledge may have been within the province of the ordinary artisan does not in and of itself make it so, absent clear and convincing evidence of such knowledge. See C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). For this reason of lack of evidentiary support, the Office Action's contention cannot support this rejection. Therefore, claim 1 is not obvious and is allowable.

Second, part of this Office Action contention is knowledge "at the time the invention." Nowhere does the Office Action provide any evidence that even if the skilled artisan had such knowledge, it would be at the time of the invention. For this reason alone, the Office Action's contention cannot support this rejection. Therefore, claim 1 is not obvious and is allowable. Claims 2, 3, and 11 are also allowable due to their dependence on allowable claim 1.

Claim 16 features modulating current to the disc in reference to the interference. Claim 23 features a modulator that modulates current to the spindle motor in a manner that avoids anomalies in the performance of the mass storage device thereby reducing wear on a head and the recording medium. Claim 29 features to modulate a current directed to the spindle motor, to reduce interference in an interface between the head and the rotatable recording medium. For similar reasons to those explained for claim 1 above, Dunn et al. do not render obvious these claims. Thus, claims 16, 23 and 29 are not anticipated and are allowable. Dependent claims 24 and 30 are also allowable due to their respective dependence on allowable independent claims.

The rejection of claims 1-3, 7-10, 16, 23, and 29 under 35 USC 103(a) as being unpatentable over Boyd et al. is respectfully traversed.

Claim 1 features an occurrence of interference in an interface between a head and a surface. Claim 16 features modulating current to the disc in reference to the interference. Claim 23 features a modulator that modulates current to the spindle motor in a manner that avoids anomalies in the performance of the mass storage device thereby reducing wear on a head and the recording medium. Claim 29 features to modulate a current directed to the spindle motor, to reduce interference in an interface between the head and the rotatable recording medium.

The Office Action correctly states that Boyd et al. do not explicitly disclose modulating the current to control the speed of the spindle motor and the interference occurring between a head and a surface. To overcome that deficiency, the Office Action makes three contentions. As explained below, these contentions are either unsupported or insignificant, and therefore cannot be used to support this claim rejection.

The first contention is that, essentially, increasing or decreasing the current to the spindle motor would correspondingly increase or decrease the speed of the spindle motor. This statement is an insignificant statement of fact that does not, by itself, render any claim obvious.

The second contention is that Boyd et al. discloses mechanical resonances, which the Office Action alleges include viscous drag and resonances between the head and the disk.

Despite this contention, mechanical resonances are entirely different from viscous drag. This contention, by itself or with the first contention, does not render any claim obvious.

The third contention apparently is, in considering it with the other two contentions, that one skilled in the art at the time of the invention that controlling the spindle motor speed based on mechanical resonances would reduce the wear on the head and the recording medium. This contention is completely unfounded.

As explained above for the Dunn et al. rejection, prior knowledge in the field of the invention must be supported by tangible teachings of reference materials. Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc., 02-1532, *6 (Fed. Cir. 8/31/04) (Fed. Cir. BBS). Nowhere does the present Office Action provide any tangible teachings or reference materials that support the Office Action's contention "it would be obvious to a person of ordinary skill in the art at the time of the invention that controlling a spindle motor based on mechanical resonances would reduce the wear on the head and the recording medium." That knowledge may have been within the province of the ordinary artisan does not in and of itself make it so, absent clear and convincing evidence of such knowledge. See C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). For this reason of lack of evidentiary support, the Office Action's contention cannot support this rejection. Therefore, claims 1, 16, 23 and 29 are not obvious and are allowable.

Second, part of each of these three Office Action contentions is knowledge "at the time the invention." Nowhere does the Office Action provide any evidence that even if the skilled artisan had such knowledge, it would be at the time of the invention. For this reason alone, these three Office Action contentions cannot support this rejection. Therefore, claims 1, 16, 23 and 29 are not obvious and are allowable. Claims 2, 3, and 7-10 are also allowable due to their dependence on allowable claim 1.

Having explained above that claims 1-30 are not anticipated by or obvious in view of the applied references, the examiner is respectfully requested to allow claims 1-32 and pass this case to issuance.

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